

## ARTICLE

# Factors affecting emergency nurses' perceptions of the triage systems

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## Abstract

**Background:** Emergency services use a triage system to prioritize patients according to their level of diagnosis. Triage is one of the mandated skills to be owned by an emergency unit nurse. This research aims to identify factors affecting emergency nurses' perceptions of the triage systems.

**Design and Methods:** 90 nurses were chosen based on quota sampling. Data were analyzed using Chi Square test ( $\alpha$  0.05) and logistic regression analysis.

**Results:** The results show that nurses perceptions were influenced by knowledge ( $p = 0.017$ ), working experience ( $p = 0.023$ ), and training ( $p = 0.041$ ). The factor that had the strongest influence in the formation of nurses' perceptions was knowledge ( $p = 0.020$  and OR = 3.19).

**Conclusions:** It can be concluded that knowledge, working experience and training influenced emergency nurses' perceptions on triage systems.

## Introduction

Emergency is synonymous with accidents and various other life-threatening cases that need immediate relief. Patients simultaneously arrive at the emergency room with conditions of varying degrees of severity, therefore, a triage system is needed. The word *triage* is derived from the French *trier*, which means to filter or sort.<sup>1</sup> According to Lossius, it is the process of grouping patients according to the severity of their injury and determining priorities for further treatment.<sup>2</sup> The system identifies patients in need of immediate attention and those that do not need emergency treatment to reduce morbidity and mortality rates.<sup>3</sup> According to Ryan, triage is used to identify, manage, and evacuate patients with severe and life-threatening cases.<sup>1</sup> The principle used to determine the priority of a triage decision is based on Maslow's Hierarchy of Needs, starting from physiological, security, love, self-esteem, and self-actualization. In the emergency department this is described in ABCD, namely airway, breathing, circulation, and disability.<sup>4</sup> In addition, there are several

other images assessed in determining priorities these include complaints of pain, bleeding, level of consciousness, temperature, and acute conditions.<sup>5</sup>

Handling of patients in the emergency room is often considered late by the their families. The internal and external factors that influence handling emergency cases include the character of the patient, staff placement, availability of medical team, time of arrival of patients, implementation of management and examination, and handling strategies chosen. Nurse's triage perception of the level of emergencies on the patient's condition is based on nurses' working experience, knowledge and training. This research aims to identify factors affecting emergency nurses' perceptions of the triage systems.

## Design and Methods

The research design uses analytic cross-sectional study approach which aims to find the association between variables. 90 nurses were chosen based on quota sampling. Data were collected using three types of questionnaire containing knowledge, working experience, and training. Data were analyzed using Chi Square test ( $\alpha$  0.05) and logistic regression analysis.

## Results and Discussions

Factors related to the skills of triage nurses are knowledge, education level, working experience, and training. These factors lead to positive attitude, better communication and performance in the hospital.<sup>6-9</sup> Sufficient knowledge of nurses' is supported by the participation of several trainings related to triage decision making, which includes EDM, BLS, BTLs, and ECG resuscitation training.<sup>10-13</sup> Triage knowledge refers to the level of factual and procedural understanding needed by emergency nurses to conduct rapid assessments, patient categorization, and allocation.<sup>14</sup>

Table 1 shows that more than half the subjects of nurses have high knowledge (53.33%), and working experiences in the ED 6-

### Significance for public health

*Emergency nurses with many years of experience possess abilities to carry out emergency tasks with determined results. Triage is one of the mandated skills needed by emergency nurses to conduct rapid assessments, patient categorization, and allocation. Nurses have capacities to prioritize patient care based on triage decision making. This study identifies factors affecting emergency nurses' perceptions of the triage systems.*

60 months (54.44%), which results in high experience index (54.44%). Whereas based on training history, more than half of the nurses' subjects had attended Prevention of Emergency Patients (EDM) training, Basic Life Support (BLS), Basic Trauma Life Support (BTLS), and ECG resuscitation, resulting in a moderate training index.

The training followed by nurses is always renewed for a maximum of three years to improve their abilities in triage decision making. Nurses must be able to prioritize patient care basing on triage systems.<sup>15,16</sup> Another study stated that factual knowledge seems more important than the length of triage experience in terms of accuracy in triage decisions.<sup>12</sup>

Knowledge has a significant relationship with perception of nurses ( $p = 0.017$ ). This is consistent with previous research showing that the main factors related to the triage skills of nurses is knowledge, and continuing education and training are the foundation of a triage system that contributes greatly to decision making triage.<sup>11-13</sup> Nurses with more than five years of experience are considered better in the triage decision-making process.<sup>4,17</sup> In this study, more experienced nurses use triage decision-making strategies through deductive reasoning and intuition, while others used inductive reasoning.

Nurses with more years of experience are more secure in deciding on patients' priorities, with the ability to train novices in the profession. Intuition is developed through a long experience that helps decide the actual condition of the patient.<sup>11</sup> Nurses with more than 20 years of clinical experience are more likely to conduct independent triage compared to those with less than 10 years of clinical experience.<sup>18</sup> According to Chung, emergency nurses with at least one year experience possess good triage skills.<sup>19</sup>

The Emergency Nurses Association (ENA) recommends that triage nurses need to possess a minimum of 6 (six) months training in the emergency department in addition to knowledge on the didactic component and clinical orientation with experienced instructors.<sup>20</sup> Several studies reported that continuous education and training is the foundation of a triage system and contributes greatly to decision making.<sup>13</sup> It is important to increase and broaden insights on new knowledge and improve the quality of triage nurses. In addition to education programs and courses, some of the additional qualities that triage nurses need include good communication and critical thinking skills, ability to work under stress, and being able to provide information to patients during the triage process.<sup>16</sup>

Based on the results of the study, more than half the subjects of nurses had attended EDM training, BLS, BTLS, and ECG resuscitation. The training index was sufficient, more than half had critical perception and there was a significant relationship ( $p = 0.041$ ).

This is in accordance with Chung: the training aims to improve nurses' skills in making triage decisions that aim to identify the scale of the emergence of patients, diagnose patients, and provide emergency nursing interventions in the emergency room. In this study the training data from the last three years was taken into consideration, as to be skilled in triage, training on triage must be renewed every one to three years.<sup>19,20</sup>

Based on Table 2, it was found that the factors from nurses that influence the results of the perception of the level of emergencies with  $p$  value  $< 0.05$  so that H1 was accepted included knowledge ( $p = 0.017$ ), experience ( $p = 0.023$ ), and training ( $p = 0.041$ ). Furthermore, all variables were included in the logistic regression analysis with the LR backward method because the bivariate

**Table 1. Frequency Distribution of Knowledge, Working Experience, Training.**

Variables	Category	N= 90	%
Knowledge	High	48	53.33
	Moderate	42	46.67
	Low	0	0.00
<b>Working Experience</b>			
Experience in the ED	$\geq 60$ months	11	12.22
	6 - 60 months	79	87.78
Experience in the Triage Room	$\geq 60$ months	41	45.56
	6 - 60 months	49	54.44
Experience index	High	49	54.44
	Moderate	41	45.56
	Low	0	0.00
<b>Training</b>			
EDM training	Yes	57	63.33
	No	33	36.67
BLS training	Yes	90	100.00
	No	0	0.00
BTLS training	Yes	87	96.67
	No	3	3.33
ECG resuscitation training	Yes	87	96.67
	No	3	3.33
Training index	High	0	0.00
	Moderate	55	61.11
	Low	35	38.89
Perception	Emergency	69	76.67
	Not emergency	21	23.33

**Table 2. Correlations Between Knowledge, Working Experience, Training on Perceptions.**

Variables		Perception				p	OR	CI 95%	
		Emergency N=90	%	Not Emergency N=90	%			Min	Max
Knowledge	High	31	34.44	16	17.78	0.017	0.330	0.124	0.880
	Moderate	38	42.22	5	5.56				
	Low	0	0	0	0				
Working Experience	High	32	35.56	19	17.78	0.023	0.331	0.118	0.834
	Moderate	37	41.11	7	5.56				
	Low	0	0	0	0				
Training	High	0	0	0	0	0.041	0.353	0.127	0.979
	Moderate	37	41.11	17	18.89				
	Low	32	35.56	4	4.44				

Table 3. Logistic Regression Analysis.

	Variables	Coefficient	p	OR (CI 95%)
Step 1	Knowledge	0.931	0.404	2.53 (0.28-22.54)
	Working Experience	-0.081	0.950	0.92 (0.07-11.61)
	Training	0.484	0.538	1.62 (0.34-7.56)
	Constanta	-1.876	0.000	0.15
Step 2	Knowledge	0.874	0.175	2.39 (0.67-8.48)
	Training	0.459	0.497	1.58 (0.42-5.95)
	Constanta	-1.875	0.000	0.15
Step 3	Knowledge	1.161	0.020	3.19 (1.19-8.50)
	Constanta	-1.743	0.000	0.18

analysis had a p value <0.25. The results of logistic regression analysis can be seen in Table 3. The most influential factor on nurses' perceptions is knowledge (p value = 0.020) with the strength of the relationship (OR) = 3.19. Studies has shown that the main factor associated with triage skills of triage nurses is knowledge.<sup>11,12</sup> In this study the dominant factor influencing nurses' perceptions was knowledge rather than training and working experience. This means that improving the knowledge is more effective than improving training and experience.

## Conclusions

It can be concluded that knowledge, working experience and training influenced emergency nurses' perceptions on triage systems.

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